

Modeling of Metal Flow during Processing by Multi-ECA-Conform

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Abstract

© 2015 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim. This article presents the results of a computer modeling study of a new technique of severe plastic deformation called Multi-ECA-Conform, ensuring a high level of strain value $\epsilon_i \geq 3$ per one processing pass of a billet from an Al alloy. The main feature of this technique is multi-stage successive shear straining of a long-length billet under the conditions of equal-channel angular pressing (ECAP) via the Conform mode. The main area of investigation is the study of the effect of the geometry of channels and channels intersection angles on the homogeneity of the strained state, all other conditions being equal. A rational combination of the channels geometry has been established that provides for a homogeneous strained state of billets and allowable force conditions of processing.

<http://dx.doi.org/10.1002/adem.201500125>
